
ACTUARIAL SECTION

for Fiscal Year ending June 30, 2004

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**The Kentucky History Center
Frankfort, Kentucky**



Human Resources & Investor Solutions

December 7, 2004

Board of Trustees
Teachers' Retirement System of the State of Kentucky
479 Versailles Road
Frankfort, KY 40601-3800

Members of the Board:

Section 161.400 of the law governing the operation of the Teachers' Retirement System of the State of Kentucky provides that the actuary shall make an actuarial valuation of the System. We have submitted the results of the annual actuarial valuation prepared as of June 30, 2004. While not verifying the data at source, the actuary performed tests for consistency and reasonability. The valuation indicates that combined member and state contributions at the rate of 22.37% of university members' salaries and 25.33% of non-university members' salaries are required to support the benefits of the System. This represents an increase in the required employer contribution rate of 1.47% of payroll. There has been a net increase in the state special appropriation from 3.59% to 3.93%, or 0.34% of payroll. Over the past few years, the Board has allocated a large portion of the additional 3.25% state supplemental contribution to sustain adequate cash flow to the Medical Insurance Fund. We are recommending that the 1.02% state supplemental contribution that was allocated towards the Medical Insurance Fund be allocated to the Retirement System. Assuming that the 1.02% state supplemental contribution is allocated to the pension plan and considering the additional 0.34% in special appropriations, an increase in the employer contribution of 0.11% of payroll is required for the fiscal year ending June 30, 2007. We recommend that the contribution to the Life Insurance Fund remain at 0.17%. The contribution to the Medical Insurance Fund would be reduced from 2.52% to 1.50% in order to offset the increase in the employer-required contribution for the pension plan.

The valuation takes into account the effect of amendments to the System enacted through the 2004 Session of the Legislature.

The financing objective of the System is that contribution rates will remain relatively level over time as a percentage of payroll. The promised benefits of the System are included in the actuarially calculated contribution rates which are developed using the unit credit actuarial cost method with projected benefits. Five-year market related value of plan assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll within a 30-year period, on the assumption that payroll will increase by 4.0% annually. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System and meet the parameters for the disclosures under GASB 25 and 27.

We have prepared the trend information shown in the Schedule of Funding Progress in the Financial Section of the Annual Report and Schedule A, Schedule B, Schedule C, Solvency Test and Analysis of Financial Experience shown in the Actuarial Section of the Annual Report.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

In our opinion the System is operating on an actuarially sound basis. Assuming that contributions to the System are made by the employer from year to year in the future at the rates recommended on the basis of the successive actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the System may be safely anticipated.

Respectfully submitted,

Edward A. Macdonald, ASA, MAAA, FCA
Principal, Consulting Actuary

Report of Actuary on the Valuation

Prepared as of June 30, 2004

Section I - Summary of Principal Results

1. For convenience of reference, the principal results of the valuation and a comparison with the results of the previous valuation are summarized below (all dollar amounts are \$1,000's):

Valuation Date	June 30, 2004		June 30, 2003	
Number of active members	71,950		71,097	
Annual salaries	\$ 2,641,533		\$ 2,497,731	
Number of annuitants and beneficiaries	35,803		34,708	
Annual allowances	\$ 914,879		\$ 846,449	
Assets				
Market value	\$ 12,858,540		\$ 11,997,350	
Actuarial value	\$ 14,255,131		\$ 13,863,786	
Unfunded actuarial accrued liability	\$ 3,362,495		\$ 2,730,995	
Amortization period (years)	30		30	
Contribution rates for fiscal year ending:	June 30, 2007		June 30, 2006	
	University	Non-University	University	Non-University
Pension Plan:				
Normal	14.19 %	18.02 %	14.29 %	18.06 %
Accrued liability	<u>8.18</u>	<u>7.31</u>	<u>6.61</u>	<u>5.80</u>
Total	22.37 %	25.33 %	20.90 %	23.86 %
Member	7.625 %	9.105 %	7.625 %	9.105 %
State (ARC)	<u>14.745</u>	<u>16.225</u>	<u>13.275</u>	<u>14.755</u>
Total	<u>22.37 %</u>	<u>25.33 %</u>	<u>20.90 %</u>	<u>23.86 %</u>
Life Insurance Fund:				
State	0.17 %	0.17 %	0.17 %	0.17 %
Medical Insurance Fund:				
Member	0.75 %	0.75 %	0.75 %	0.75 %
State Match	0.75	0.75	0.75	0.75
State Additional	<u>0.00</u>	<u>0.00</u>	<u>1.02</u>	<u>1.02</u>
Total	1.50 %	1.50 %	2.52 %	2.52 %
Total Contributions:	<u>24.04</u>	<u>27.00</u>	<u>23.59</u>	<u>26.55</u>
Member Statutory	8.375 %	9.855 %	8.375 %	9.855 %
State Statutory	11.735	13.215	11.625	13.105
State Special	<u>3.93</u>	<u>3.93</u>	<u>3.59</u>	<u>3.59</u>
Total	24.04 %	27.00 %	23.59 %	26.55 %



2. The valuation indicates that combined member and State contributions at the rate of 22.37% of salaries for university members and at 25.33% for non-university members are sufficient to support the current benefits of the System. We also recommend that 0.17% be contributed by the state to the Life Insurance Fund and 1.50% combined member and state contributions be made to the Medical Insurance Fund. Comments on the valuation results as of June 30, 2004 are given in Section IV and further discussion of the contribution levels is set out in Sections V and VI.
3. Schedule D of this report outlines the full set of actuarial assumptions and methods employed in the current valuation. There have been no changes since the previous valuation.
4. The valuation takes into account the effect of amendments to the System enacted through the 2004 Session of the Legislature. Since the previous valuation, the System has been amended to grant a one-time 0.8% cost-of-living increase effective July 1, 2004 and a one-time 0.7% cost-of-living increase effective July 1, 2005.

Section II - MEMBERSHIP DATA

1. Data regarding the membership of the System for use as a basis of the valuation were furnished by the Retirement System office. The following table shows the number of active members and their annual salaries as of June 30, 2004 on the basis of which the valuation was prepared.

Group	Number	Annual Salaries (\$1,000)
Men	18,085	\$ 731,576
Women	53,865	1,909,957
Total	71,950	2,641,533

The table reflects the active membership for whom complete valuation data was submitted. The results of the valuation were adjusted to take account of inactive members and members for whom incomplete data was submitted.



2. The following table shows the number and annual retirement allowances payable to annuitants and beneficiaries on the roll of the Retirement System as of the valuation date.

The Number and Annual Retirement Allowances of Annuitants and Beneficiaries on the Roll as of June 30, 2004		
Group	Number	Annual Retirement Allowances ¹ (\$1,000)
Service Retirements	31,063	\$ 828,370
Disability Retirements	1,932	43,477
Beneficiaries of Deceased Members	<u>2,417</u>	<u>39,965</u>
Total	34,412	911,812

^{*} In addition, there are 391 beneficiaries entitled to term-certain only annuities totaling \$3,060,923 annually.

¹ Includes cost-of-living adjustments effective through July 1, 2004.

3. Tables 1 and 2 of Schedule F give the distribution by age and by years of service of the number and annual salaries of active members included in the valuation, while Tables 3, 4 and 5 give the number and annual retirement allowances of annuitants and beneficiaries included in the valuation, distributed by age.

Section III - ASSETS

- As of June 30, 2004 the market value of Pension Plan assets for valuation purposes held by the System amounted to \$12,858,540,479. This value excludes assets in the Medical Insurance Fund, the 403(b) Program Reserve Fund, and the Life Insurance Fund, which are not included in the assets used for Pension Plan valuation purposes.
- The five-year market related value of Pension Plan assets used for valuation purposes as of June 30, 2004 was \$14,255,130,659. Schedule B shows the development of the actuarial value of assets as of June 30, 2004.
- Schedule C shows the receipts and disbursements for the year preceding the valuation date and a reconciliation of the asset balances for the Pension Plan, Medical Insurance Fund and the Life Insurance Fund.



Section IV - COMMENTS ON VALUATION

1. Schedule A of this report outlines the results of the actuarial valuation (amounts are \$1,000's). The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D.
2. The valuation shows that the System has an actuarial accrued liability of \$7,711,464 for benefits expected to be paid on account of the present active membership, based on service to the valuation date. The liability on account of benefits payable to annuitants and beneficiaries amounts to \$9,749,268 of which \$747,691 is for special appropriations remaining to be made toward funding minimum annuities, ad hoc increases and sick leave allowances granted after 1981. The liability for benefits expected to be paid to inactive members and to members entitled to deferred vested benefits is \$156,894. The total actuarial accrued liability of the System amounts to \$17,617,626. Against these liabilities, the System has present assets for valuation purposes of \$14,255,131. When this amount is deducted from the actuarial accrued liability of \$17,617,626, there remains \$3,362,495 as the unfunded actuarial accrued liability.
3. The normal contribution rate is equal to the actuarial present value of benefits accruing during the current year divided by the annual active members' payroll. The normal contribution rate is determined to be 14.19% of payroll for university members and 18.02% for non-university members.

Section V - CONTRIBUTIONS PAYABLE UNDER THE SYSTEM

1. Section 161.540 of the retirement law provides that each university member will contribute 8.375% of annual salary to the System and each non-university member will contribute 9.855% of annual salary. Of this amount, 0.75% is paid to the Medical Insurance Fund for medical benefits leaving 7.625% for university members and 9.105% for non-university members applicable for the retirement benefits taken into account in the valuation.
2. Section 161.550 provides that the State will match the member contributions and contribute a supplemental 3.25% of members' salaries towards discharging the System's unfunded obligations. The System was amended as of June 30, 2000 to allow the Board to allocate up to a maximum of the entire 3.25% to the Medical Insurance Fund. For the 2006/2007 fiscal year, we recommend that the Board allocate the entire 3.25% towards the Pension Plan.
3. Therefore, 10.875% of active university members' salaries and 12.355% of active non-university members' salaries is funded by statute or supplemental funding for the Pension Plan and Life Insurance Fund. Of this amount, 0.17% of payroll will be allocated to the Life Insurance Fund. Based on the results of the valuation, an additional 0.11% of payroll for both university and non-university will be required in order to maintain the amortization of the unfunded liability of the Pension Plan within a 30-year period. An additional special appropriation of \$103,933,000, or 3.93% of total payroll will be made by the State. The total required employer contribution rate to the Pension Plan is, therefore, 14.745% for university members and 16.225% for non-university members. The total member and employer contribution rates to the Pension Plan are shown in the following table.



Contribution Rates by Source		
<u>Member</u>	UNIVERSITY	NON-UNIVERSITY
Statutory Total	8.375%	9.855%
Statutory Medical Insurance Fund	<u>(0.75)</u>	<u>(0.75)</u>
Contribution to Pension Plan	7.625%	9.105%
<u>Employer</u>		
Statutory Matching Total	8.375%	9.855%
Statutory Medical Insurance Fund	(0.75)	(0.75)
Supplemental Funding	<u>3.25</u>	<u>3.25</u>
Subtotal	10.875%	12.355%
Life Insurance	(0.17) %	(0.17) %
Additional to Maintain 30-Year Amortization	0.11	0.11
Special Appropriation	<u>3.93</u>	<u>3.25</u>
Contribution to Pension Plan	14.745%	16.225%
Total Contribution to Pension Plan	22.37 %	25.33 %

4. The valuation indicates that normal contributions at the rate of 14.19% of active university members' salaries are required to meet the cost of benefits currently accruing. The normal rate for non-university members is 18.02%. The difference between the total contribution rate and the normal rate remains to be applied toward the liquidation of the unfunded actuarial accrued liability. This accrued liability rate is 8.18% for university members and 7.31% for non-university members. These rates include special appropriations of \$103,933,000 or 3.93% of payroll to be made by the State. These rates are shown in the following table.

ACTUARIALLY DETERMINED CONTRIBUTION RATES		
Rate	PERCENTAGE OF ACTIVE MEMBERS' SALARIES	
	University	Non-University
Normal	14.19 %	18.02 %
Accrued Liability*	<u>8.18</u>	<u>7.31</u>
Total	22.37 %	25.33 %

* Includes special appropriations of \$103,933,000 or 3.93% of payroll to be made by the State.

5. The unfunded actuarial accrued liability amounts to \$3,362,495,000 as of the valuation date. Accrued liability contributions at the rate of 8.18% of active university members' payroll and 7.31% of non-university members' payroll are sufficient to amortize the unfunded actuarial accrued liability over a 30-year period, based on the assumption that the payroll will increase by 4.0% annually.



Section VI - COMMENTS ON LEVEL OF FUNDING

1. The benefit percentage for non-university members is 2.0% for service accrued through July 1, 1983 and 2.5% for service accrued up to 30 years accrued after that date. However, for members who join the System on or after July 1, 2002 and retire with less than 10 years of service, the benefit percentage is 2.0%. For members joined the system on or after July 1, 2002, who retire with 10 or more years of service, the benefit percentage is 2.5% for all years of service up to 30 years. For all members who retire on or after July 1, 2004, the benefit percentage for service earned in excess of 30 years is 3.0%. The total net contribution rate is 25.33% of payroll for non-university members. For university members the benefit percentage is 2.0% for all service and the contribution rate is 22.37 %. Our calculations indicate that these contribution rates will be sufficient to cover the benefits of the System, the annual 1.5% increase in the allowances of retired members and beneficiaries, and the liabilities for minimum annuities, ad hoc increases and sick leave allowances granted after 1981 liabilities for minimum annuities, ad hoc increases and sick leave allowances granted after 1981.
2. The valuation indicates that the present statutory contribution rates, supplemental funding and special appropriations, if continued at the current level percentage, along with an additional required contribution of 0.11%, not currently provided in statute are sufficient to meet the cost of benefits currently accruing and provide for the amortization of the unfunded actuarial accrued liability over a period of 30 years. However, as existing special contributions expire, the statutory contributions or supplemental funding will be required to increase as an equal percentage of payroll, in order to amortize the unfunded liability within a period of 30 years.
3. The System has been operating on an actuarially sound basis. However, there are no excess assets or contributions available to provide additional benefits, and there is an increase in the required employer contribution of 0.11% of payroll for the fiscal year ending June 30, 2007. In addition, as existing special contributions expire, the statutory contributions or supplemental funding will be required to increase as an equal percentage of payroll, in order to amortize the unfunded liability within 30 years. Any further benefit improvements must be accompanied by the entire additional contributions necessary to support the benefits.

Section VII - ANALYSIS OF FINANCIAL EXPERIENCE

The following table shows the estimated gain or loss from various factors that resulted in an increase of \$631,500,000 in the unfunded accrued liability from \$2,730,995,000 to \$3,362,495,000 during the year ending June 30, 2004.

ITEM	Amount of Increase/ (Decrease)
Interest (7.50%) added to previous unfunded accrued liability	\$ 204,825
Accrued liability contribution	(145,688)
Experience:	
Valuation asset growth	349,148
Pensioners' mortality	51,575
Turnover and retirements	64,427
New entrants	32,461
Salary Increases	(87,248)
Method changes	0
Amendments	162,000
Assumption changes	<u>0</u>
TOTAL	\$ 631,500

*(Dollar amounts
in thousands)*



Section VIII - ACCOUNTING INFORMATION

1. Governmental Accounting Standards Board Statements 25 and 27 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

Number of Active and Retired Members as of June 30, 2004	
GROUP	NUMBER
Retirees and Beneficiaries currently receiving benefits	35,803
Terminated employees entitled to benefits but not yet receiving benefits	5,153
Active Plan Members	<u>71,950</u>
TOTAL	112,906

2. Another such item is the schedule of funding progress as shown below.

Schedule of Funding Progress (Dollar amount in thousands)						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Projected Unit Credit (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	(UAAL as a Percentage of Covered Payroll ((b-a) / c)
06/30/99	\$ 11,958,584	\$ 12,288,231	\$ 329,647	97.3 %	\$ 2,041,463	16.1%
06/30/00 *	12,759,636	13,330,418	570,782	95.7	2,133,743	26.8
06/30/01 **	13,299,161	14,642,129	1,342,968	90.8	2,213,772	60.7
06/30/02	13,588,847	15,695,574	2,106,726	86.6	2,313,663	91.1
06/30/03	13,863,786	16,594,781	2,730,995	83.5	2,497,731	109.3
06/30/04	14,255,131	17,617,626	3,362,495	80.9	2,641,533	127.3
* Reflects change in asset valuation method and System amendments.						
** Reflects change in decremental assumptions.						



KENTUCKY TEACHERS' RETIREMENT SYSTEM

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2004. Additional information as of the latest actuarial valuation follows.

Valuation Date 06/30/2004
 Actuarial cost method Projected unit credit
 Amortization method Level percent of pay, open
 Remaining amortization period 30 years
 Asset valuation method 5-year smoothed market

Actuarial Assumptions:

Investment Rate of Return* 7.50%
 Projected Salary Increases* 4.00 - 8.10%
 Cost-of-Living Adjustment 1.50% Annually
 *Includes Inflation at 4.00%

TREND INFORMATION

<u>Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Percentage of APC Contributed</u>	<u>Net Pension Obligation (NPO)</u>
June 30, 2002	\$ 284,794,710	100%	\$0
June 30, 2003	322,046,968	100%	\$0
June 30, 2004	364,351,412	100%	\$0



SCHEDULE A
Results of the Valuation
Prepared as of June 30, 2004
(\$1,000)

1. ACTUARIAL ACCRUED LIABILITY

Present value of prospective benefits payable in respect of:

(a)	Present active members:		
	• Service retirement benefits	\$ 7,254,873	
	• Disability retirement benefits	258,699	
	• Death and survivor benefits	49,280	
	• Refunds of member contributions	<u>148,612</u>	
	Total		\$ 7,711,464
(b)	Present inactive members and members entitled to deferred vested benefits:		156,894
(c)	Present annuitants and beneficiaries:		
	• Service retirement benefits	\$ 8,961,520	
	• Disability retirement benefits	390,764	
	• Death and survivor benefits	<u>396,984</u>	
	Total		<u>9,749,268</u>
			\$ 17,617,626
(d)	Total actuarial accrued liability		<u>14,255,131</u>

2. PRESENT ASSETS FOR VALUATION PURPOSES

3. Unfunded Actuarial Accrued Liability	\$ 3,362,495
[(1) MINUS (2)]	

4. NORMAL CONTRIBUTION RATE	<u>UNIVERSITY</u>	<u>NON-UNIVERSITY</u>
(a) Actuarial present value of benefits accruing annually	\$ 22,145	\$ 447,759
(b) Annual payroll of active members	\$ 156,070	\$ 2,485,463
(c) Normal contribution rate [4(a) divided by 4(b)]	14.19%	18.02%

Solvency Test

(in millions of dollars)

	(1)	(2)	(3)	
	Active Member Contributions	Retirants and Beneficiaries	Active Members (Employer Financed Portion)	Valuation Assets
Fiscal Year				
1999	\$ 2,051.1	\$ 6,291.7	\$ 3,945.4	\$ 11,958.6
2000	2,128.4	7,183.4	4,018.6	12,759.6
2001	2,215.5	8,037.0	4,389.6	13,299.2
2002	2,302.3	8,816.9	4,576.4	13,588.8
2003	2,413.9	9,329.3	4,851.6	13,863.8
2004	2,546.1	9,906.2	5,165.3	14,255.1
Fiscal Year	(1)	(2)	(3)	
Portion of	1999	100 %	92 %	
Accrued	2000	100	86	
Liabilities	2001	100	69	
Covered	2002	100	54	
by	2003	100	44	
Assets	2004	100	35	



KENTUCKY TEACHERS' RETIREMENT SYSTEM

SCHEDULE B **Development of June 30, 2004** **Actuarial Value of Assets**

1.	Actuarial Value of Assets on June 30, 2003	\$ 13,863,786,244
2.	2003/2004 Net Cash Flow	
	a. Contributions	603,273,498
	b. Disbursements	<u>891,747,723</u>
	c. Net Cash Flow	
	(2)a - (2)b	(288,474,225)
3.	Expected Investment Return	
	[(1) x .075] + [(2)c x .0375]	1,028,966,185
4.	Expected Actuarial Value of Assets on June 30, 2004	
	(1) + (2) c + (3)	14,604,278,204
5.	Market Value of Assets on June 30, 2004	12,858,540,479
6.	Excess of Market Value over Expected Actuarial Value	
	(5) - (4)	(1,745,737,725)
7.	20% Adjustment towards Market Value	
	.20 x (6)	(349,147,545)
8.	Actuarial Value of Assets on June 30, 2004	
	(4) + (7)	\$ 14,255,130,659
9.	Rate of Return on Actuarial Value	4.96%

SCHEDULE C **PENSION PLAN ASSETS** **Summary of Receipts & Disbursements*** **(Market Value)**

	For the Year Ending	
	<u>June 30, 2004</u>	<u>June 30, 2003</u>
<u>RECEIPTS FOR THE YEAR</u>		
Contributions		
Members	\$ 238,922,086	\$ 233,429,797
Employers	<u>364,351,412</u>	<u>322,046,968</u>
Total	\$ 603,273,498	\$ 555,476,765
Net Investment Income	<u>1,156,237,635</u>	<u>537,286,820</u>
TOTAL	\$ 1,759,511,133	\$ 1,092,763,585
<u>DISBURSEMENTS FOR THE YEAR</u>		
Benefits Payments	\$ 881,270,288	\$ 813,102,868
Refunds to Members	10,477,435	9,955,112
Medical Insurance Premium	0	0
Miscellaneous, including expenses	<u>6,572,592</u>	<u>6,384,481</u>
TOTAL	\$ 898,320,315	\$ 829,442,461
<u>EXCESS OF RECEIPTS OVER DISBURSEMENTS</u>	\$ 861,190,818	\$ 263,321,124
<u>RECONCILIATION OF ASSET BALANCES</u>		
Asset Balance as of the Beginning of the Year	\$ 11,997,349,661	\$ 11,734,028,537
Excess of Receipts over Disbursements	<u>861,190,818</u>	<u>263,321,124</u>
Asset Balance as of End of the Year	<u>12,858,540,479</u>	<u>11,997,349,661</u>
Rate of Return of Market Value	9.76%	4.63%



* Excludes assets for Medical Insurance Fund, the 403(b) Program Reserve Fund and the Life Insurance Fund.

SCHEDULE C
MEDICAL INSURANCE FUND
Summary of Receipts & Disbursements
(Market Value)

For the Year Ending

<u>RECEIPTS FOR THE YEAR</u>	<u>June 30, 2004</u>	<u>June 30, 2003</u>
Contributions		
Members	\$ 53,903,551	\$ 50,718,085
Employers	<u>53,346,747</u>	<u>77,235,407</u>
Total	\$ 107,250,298	\$ 127,953,492
Net Investment Income	<u>7,127,109</u>	<u>7,391,671</u>
TOTAL	\$ 114,377,407	\$ 135,345,163
<u>DISBURSEMENTS FOR THE YEAR</u>		
Benefits Payments	\$ 0	\$ 0
Refunds to Members	12,150	4,106
Medical Insurance Premium	119,297,357	112,173,662
Miscellaneous, including expenses	<u>3,970,311</u>	<u>3,676,128</u>
TOTAL	\$ 123,279,818	\$ 115,853,896
<u>EXCESS OF RECEIPTS OVER DISBURSEMENTS</u>	\$ (8,902,411)	\$ 19,491,267
<u>RECONCILIATION OF ASSET BALANCES</u>		
Asset Balance as of the Beginning of the Year	\$ 165,536,575	\$ 146,045,308
Excess of Receipts over Disbursements	<u>(8,902,411)</u>	<u>19,491,267</u>
Asset Balance as of End of the Year	<u>\$ 156,634,164</u>	<u>\$ 165,536,575</u>

SCHEDULE C
LIFE INSURANCE FUND
Summary of Receipts & Disbursements
(Market Value)

For the Year Ending

<u>RECEIPTS FOR THE YEAR</u>	<u>June 30, 2004</u>	<u>June 30, 2003</u>
Contributions		
Members	\$ 0	\$ 0
Employers	<u>17,928,687</u>	<u>19,085,931</u>
Total	\$ 17,928,687	\$ 19,085,931
Net Investment Income	<u>1,945,052</u>	<u>1,265,254</u>
TOTAL	\$ 19,873,739	\$ 20,351,185
<u>DISBURSEMENTS FOR THE YEAR</u>		
Benefits Payments	\$ 4,015,800	\$ 3,961,800
Refunds to Members	0	0
Medical Insurance Premium	0	0
Miscellaneous, including expenses	<u>0</u>	<u>0</u>
TOTAL	\$ 4,015,800	\$ 3,961,800
<u>EXCESS OF RECEIPTS OVER DISBURSEMENTS</u>	\$ 15,857,939	\$ 16,389,385
<u>RECONCILIATION OF ASSET BALANCES</u>		
Asset Balance as of the Beginning of the Year	\$ 45,158,168	\$ 28,768,783
Excess of Receipts over Disbursements	<u>15,857,939</u>	<u>16,389,385</u>
Asset Balance as of End of the Year	<u>\$ 61,016,107</u>	<u>\$ 45,158,168</u>



SCHEDULE D

Outline of Actuarial Assumptions and Methods

The assumptions and methods used in the valuation were selected by the Actuary based on the actuarial experience investigation as of June 30, 2000 and adopted by the Board of Trustees on December 17, 2001.

Investment Rate of Return: 7.5% per annum, compounded annually.

Salary Increases: Representative values of the assumed annual rates of future salary increases are as follows and include inflation at 4.0% per annum:

Age	20	25	30	35	40	45	50	55	60	65
Annual Rate	8.10%	7.20%	6.20%	5.50%	5.00%	4.70%	4.50%	4.30%	4.20%	4.00%

Separations From Service: Representative values of the assumed annual rates of death, disability, withdrawal, service retirement and early retirement are as follows:

MALES: Annual Rate of . . .					
AGE	DEATH	DISABILITY	WITHDRAWAL	SERVICE RETIREMENT*	EARLY RETIREMENT
20	.003 %	.01%	8.65 %		
25	.010	.01	8.95		
30	.016	.02	6.46		
35	.032	.04	4.49		
40	.048	.08	3.21		
45	.064	.18	2.12	15.00 %	
50	.104	.33	2.33	15.00	
55	.216	.55	3.00	25.00	4.00%
60	.375	.87		20.00	
62	.438	1.03		28.00	
65	.566			40.00	
70				100.00	

** It is also assumed that an additional 20% will retire in the first year eligible for unreduced benefits if before age 60.*



ACTUARIAL SECTION

FEMALES: Annual Rate of . . .					
AGE	DEATH	DISABILITY	WITHDRAWAL	SERVICE RETIREMENT*	EARLY RETIREMENT
20	.002 %	.03 %	7.16 %		
25	.007	.03	8.34		
30	.014	.04	6.30		
35	.026	.07	4.08		
40	.044	.14	2.61		
45	.055	.26	1.92		
50	.066	.42	2.02	15.00%	
55	.085	.64	2.50	30.00	5.00 %
60	.122	.91		25.00	
62	.137	1.05		25.00	
65	.159			35.00	
70				100.00	

** It is also assumed that an additional 25% of women will retire in their first year of eligibility if before age 60.*

Deaths After Retirement: Representative values of the assumed annual rates of death after service and disability retirement are as follows:

Annual Rate of Death After . . .

	Service Retirement		Disability Retirement	
Age	MALE	FEMALE	MALE	FEMALE
45	.2 %	.1 %	5.1%	4.5%
50	.3	.2	5.1	4.5
55	.5	.2	5.1	4.5
60	.9	.4	5.1	4.5
65	1.7	.7	5.1	4.5
70	2.8	1.4	5.1	4.5
75	4.2	2.6	5.1	4.5
80	6.5	4.4	7.8	6.1
85	10.0	7.5	12.3	10.5
90	15.5	12.8	19.1	17.6
95	21.9	21.1	29.2	28.8

Actuarial Method: Unit Credit Actuarial Cost Method with projected benefits. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

Assets: Five-year market related actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return of 7.5%. The amount recognized each year is 20% of the difference between market value and expected actuarial value.

Expense Load: None.

Percent Married: 100%, with females 3 years younger than males.

Loads:

Unused Sick Leave: 1% of active liability

Refund: 1% of active liability

COLA Feature: 12% of withdrawal liability (if deferred annuity is greater than the contribution account)

Survivor Benefits: 3.5% of disability liability.



SCHEDULE E

Summary of Main System Provisions As Interpreted for Valuation Purposes

The Teachers' Retirement System of the State of Kentucky was established on July 1, 1940. The valuation took into account amendments to the System effective through June 30, 2004. The following summary describes the main benefit and contribution provisions of the System as interpreted for the valuation.

DEFINITIONS

"Final average salary" means the average of the five highest annual salaries which the member has received for service in a covered position and on which the member has made contributions or on which the public board, institution or agency has picked up the member contributions. For a member who retires after attaining age 55 with 27 years of service, "final average salary" means the average of the three highest annual salaries.

BENEFITS

Service Retirement Allowance

Condition for Allowance: Completion of 27 years of service or attainment of age 55 and 5 years of service.

Amount of Allowance: The annual retirement allowance for non-university members is equal to:

- (a) 2.0% of final average salary multiplied by service before July 1, 1983, plus
- (b) 2.5% of final average salary multiplied by service after July 1, 1983.
- (c) For individuals who become members of the Retirement System on or after July 1, 2002 and have less than 10 years of service at retirement, the retirement allowance is 2.0% of final average salary multiplied by service. If, however, they have 10 or more years, they receive a benefit percentage of 2.5% for all years of service up to 30 years.
- (d) For members retiring on or after July 1, 2004, the retirement allowance formula is 3.0% of final average salary for each year of service credit earned in excess of 30 years.

The annual retirement allowance for university members is equal to 2.0% of final average salary multiplied by all years of service.

For all members, the annual allowance is reduced by actuarial equivalent factors from the earlier of age 60 or the date the member would have completed 27 years of service.

The minimum annual service allowance for all members is \$440 multiplied by credited service.

Disability Retirement Allowance

Condition for Allowance: Totally and permanently incapable of being employed as a teacher and under age 60 but after completing 5 years of service.



Amount of Allowance: The disability allowance is equal to the greater of the service retirement allowance or 60% of the member's final average salary. The

disability allowance is payable over an entitlement period equal to 25% of the service credited to the member at the date of disability or five years, whichever is longer. After the disability entitlement period has expired and if the member remains disabled, he will be retired under service retirement. The service retirement allowance will be computed with service credit given for the period of disability retirement. The allowance will not be less than \$6,000 per year. The service retirement allowance will not be reduced for commencement of the allowance before age 60 or the completion of 27 years of service.

Benefits Payable on Separation from Service

Any member who ceases to be in service is entitled to receive his contributions with allowable interest. A member who has completed 5 years of creditable service and leaves his contributions with the System may be continued in the membership of the System after separation from service, and file application for service retirement after the attainment of age 60.

Life Insurance

A separate Life Insurance fund has been created as of June 30, 2000 to pay benefits on behalf of deceased KTRS active and retired members.

Death Benefits

A surviving spouse of an active member with less than 10 years of service may elect to receive an annual allowance of \$2,880 except that if income from other sources exceeds \$6,600 per year the annual allowance will be \$2,160.

A surviving spouse of an active member with 10 or more years of service may elect to receive an allowance which is the actuarial equivalent of the allowance the deceased member would have received upon retirement. The allowance will commence on the date the deceased member would have been eligible for service retirement and will be payable during the life of the spouse.

If the deceased member is survived by unmarried children under age 18 the following schedule of annual allowances applies:

<u>Number of Children</u>	<u>Annual Allowance</u>
1	2,400
2	4,080
3	4,800
4 or more	5,280

The allowances are payable until a child attains age 18, or age 19 if a full-time student.

If the member has no eligible survivor, a refund of his accumulated contributions is payable to his estate.

Options:

In lieu of the regular Option 1, a retirement allowance payable in the form of a life annuity with refundable balance, any member before retirement may elect to receive a reduced allowance which is actuarially equivalent to the full allowance, in one of the following forms:

Option 2. A single life annuity payable during the member's lifetime with payments for 10 years certain.

Option 3. At the death of the member his allowance is continued throughout the life of his beneficiary.



Option 3(a). At the death of the beneficiary designated by the member under Option 3, the member's benefit will revert to what would have been paid had he not selected an option.

Option 4. At the death of the member one half of his allowance is continued throughout the life of his beneficiary.

Option 4(a). At the death of the beneficiary designated by the member under Option 4, the member's benefit will revert to what would have been paid had he not selected an option.

Post-Retirement Adjustments

The retirement allowance of each retired member and of each beneficiary shall be increased by 1.50% each July 1.

CONTRIBUTIONS

Member Contributions

University members contribute 8.375% of salary of which 7.625% is contributed to the Retirement System and 0.75% is contributed to the Medical Insurance Fund. Non-university members contribute 9.855% of salary of which 9.105% is contributed to the Retirement System and 0.75% is contributed to the Medical Insurance Fund. Member contributions are picked up by the employer.



Schedule of Active Member Valuation Data

	(1)	(2)	(3)	(4)
Fiscal Year	Number of Active Members	Total Annual Payroll	Average Annual Pay	% Increase (Decrease) in Average Pay
1998	51,677	\$ 1,973,749,000	\$ 38,194	1.8%
1999	51,983	2,041,463,000	39,272	2.8
2000	53,002	2,133,743,000	40,258	2.5
2001	53,570	2,213,772,000	41,325	2.7
2002	54,175	2,313,663,000	42,707	3.3
2003	71,097	2,497,731,000	35,131	(17.7)
2004	71,950	2,641,533,000	36,713	4.5

**Schedule of Retirants, Beneficiaries and Survivors
Added to and Removed from Rolls**

	Add to Rolls		Remove from Rolls		Rolls End-of-Year	
Fiscal Year	Number	Annual Allowances (Millions)	Number	Annual Allowances (Millions)	Number	Annual Allowances (Millions)
1998	2,500	\$ 66.7	1,040	\$ 13.4	27,744	\$494.1
1999	2,415	73.9	998	13.9	29,161	554.0
2000	2,462	79.2	1,008	14.1	30,615	619.2
2001	2,410	77.0	1,128	16.5	31,897	679.8
2002	2,577	86.2	1,063	16.8	33,408	749.2
2003	2,252	86.7	1,015	16.9	34,645	819.0
2004	2,126	85.4	1,033	17.5	35,738	887.0

Fiscal Year	% Increase in Annual Allowances	Average Annual Allowances
1998	12.1	\$ 17,809
1999	12.1	19,000
2000	11.8	20,226
2001	9.8	21,311
2002	10.2	22,425
2003	9.3	23,641
2004	8.3	24,819

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